

## Introduction to *JREFE* Special Issue on the 2007 MCM International Symposium

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**Abstract** This article introduces the 2007 Maastricht-Cambridge-MIT Symposium articles in this special issue. The introduction not only briefly describes each of the four articles from that symposium included in this special issue, but also describes the symposium including links to other papers and presentations of the symposium not published in this issue.

**Keywords** MCM International Symposium · Real estate · Decision maker · Market price · Mortgage · Real options · Decisions analysis

The 2007 Maastricht-Cambridge-MIT (MCM) International Symposium on Real Estate Finance and Investment was hosted by MIT, October 12–14 at Cambridge, MA, USA.<sup>1</sup> This rendition of the annual symposium differed slightly from previous symposia in the series by attempting to focus in some depth on a particular topic and subject area, namely, real options applications to real estate development. However, papers focusing on other topics were also presented at the conference, and are included in the current special issue of the *Journal*. In this introduction we will first briefly review the symposium and then introduce each of the four papers appearing in this issue.

As previously, the 2007 MCM Symposium contrasted with typical association annual meetings by featuring longer, more in-depth paper presentations and

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<sup>1</sup>Special thanks for contributing sponsorship also go to the National University of Singapore (NUS), Department of Real Estate. Readers should note that, according to present plans, beginning in 2009 NUS will replace Cambridge University as the third “leg” of this annual symposium series.

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discussions in a relaxed setting conducive to the generation of ideas among the small group of participants. The idea was to take advantage of this format to focus on a particular topic that seemed ripe for further development, to use the symposium to push such development. The topic of real options applications to real estate development seemed to fit this bill.

For a generation, scholars around the world have been discovering and developing principles, methodologies, and analytical tools in the area of real options that are relevant to design, planning, and decision making regarding real estate and infrastructure development projects. Yet this scholarship has not seen much adoption and use in actual practice and decision making. With this in mind, the 2007 symposium imbedded within its first day an industry-academia executive round table that brought together industry decision-makers and the real estate academics from around the world who were participating in the symposium. The round table featured presentations from faculty in the MIT School of Engineering, as well as a practicing developer's perspective, exploring an engineering perspective on real options, including computer simulation decision tools aimed at valuing flexibility and addressing uncertainty in real estate development project design and decision making in a practical manner that decision makers can understand. The round table in conjunction with the academic symposium furthered the bridge between economics and engineering, and between academia and industry practice. In general, the engineering approach to real options is aimed more directly at practical decision-maker usage in the design and management of development projects, whereas the economics-based approach more familiar to many real estate academics is aimed more at valuation and fundamental understanding of the behavior of developers.<sup>2</sup>

The nine papers presented in the 2007 symposium included three each from authors based in (and focusing on) Europe, North America, and Asia. Of the nine papers, six either focused on or utilized real options theory or methodology. All nine papers are available on the symposium web site.<sup>3</sup>

While the symposium featured nine papers, only four have been included in the current special issue of the *Journal*. These include three papers that utilize real option theory (Barthelemy-Prigent, Fu-Jennen, and Pavlov-Wachter, though only Fu-Jennen focuses on the real estate development topic). In general, the other papers utilizing real options theory, like the round-table presentations, took a more practical

<sup>2</sup> Presentations in the round table included the following: "Strategic Engineering: Designing Systems for Flexibility in an Uncertain Environment" by Professor Olivier de Weck of the MIT Aeronautics and Astronautics Department and Engineering Systems Division (ESD); "Flexibility in Real Estate Project Development" by Professor Richard de Neufville of the MIT Department of Civil and Environmental Engineering and ESD and Michel-Alexandre Cardin of the ESD; and "Flexible Development Using Form-Based Codes" by William Gietema of Arcadia Realty Development Corporation of Dallas, TX, USA. All of the round table presentations are available on the symposium web site at: <http://stellar.mit.edu/S/project/cambridge-maastricht-symposium-2007/>.

<sup>3</sup> Go to: <http://stellar.mit.edu/S/project/cambridge-maastricht-symposium-2007/>. (You should not have to log in.) Please note that the versions of the papers posted to the symposium are the *preliminary* versions available at the time of the symposium in October 2007. Most (if not all) of these papers have been subsequently updated, revised, and (in many cases are or will be) published elsewhere. Readers are advised to contact the authors for updated information.

approach or focused on more specific cases.<sup>4</sup> The fourth paper included here (Clayton-Ling-Naranjo), while not involving option theory, is extremely timely in its focus on the effect of liquidity and capital flow in commercial property market price movements. Also very timely is the Pavlov-Wachter paper, which focuses on underpricing of the mortgage put option (i.e., “aggressive lending”). The other two included papers advance innovative use of real options theory in an international context, including models of office construction in Singapore and Hong Kong (Fu-Jennen), and models of optimal property holding periods in a diversified portfolio (Barthelemy-Prigent). The remainder of this Introduction will briefly describe each of the four included articles.

The lead-off article is “Commercial Real Estate Valuation: Fundamentals versus Investor Sentiment”, by Jim Clayton, David C. Ling, and Andy Naranjo. This paper presents what is perhaps the most complete and comprehensive analysis to date of the relative roles of fundamentals versus “sentiment” in commercial (investment) property pricing in the private property market. The authors define “sentiment” to refer to an irrational component in the property price movements (that is, a component that is not related to present or predicted future fundamentals). Of course, market participants and analysts often pin such sentiment onto their stated expectations about either investment returns (risk premia in discount rates) or future cash flows. But once the authors orthogonalize their sentiment measure from such expectations, it is seen that sentiment plays an important role, along with rational fundamentals, in the price movements of commercial real estate (as indicated by cap rate changes). The sentiment measures used by the authors are closely related to capital flows and trading volume in the private property markets. The bottom line implication is that commercial property prices can at times reflect an irrational sentiment component that can drive such market prices above sustainable levels (or conceivably below sustainable levels, though the empirical evidence in the present paper draws largely from the recent up-market).

The next paper is “Office construction in Singapore and Hong Kong: Testing real option implications”, by Maarten Jennen and Yuming Fu. This paper uses a real options approach to analyze office development in Singapore and Hong Kong. The paper makes three contributions to the literature. First, it looks at real options implications in a broader way than previous work, including the interaction effects of volatility and interest rate changes on commercial property construction. Second, the paper uses a cointegration approach to model the long-term equilibrium relation between the office stock and office employment. Third, the paper seizes on the unique “city-state” nature of both Singapore and Hong Kong, where the local stock markets largely reflect a single metropolitan area’s economy (and hence the economic base of the local property markets). Considering this, the paper uses the forward-looking behavior of the local stock markets to generate demand growth expectations relevant for the office markets. Such stock-market-based volatility is found to raise the hurdle rent for new construction. However, volatility also affects

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<sup>4</sup> An important exception was the Buttimer-Clark-Ott paper, which presented a very rich real options model of land development value, an updated version of which we understand will be published subsequently to this special issue.

the investment response to the real interest rate and growth expectations. More specifically, when volatility is high, new property development could perversely react to interest rate changes and expectations of demand growth. The overall conclusion from the paper is that the real option based model developed in the paper is capable of predicting new office construction in the two cities studied.

The third paper is “Optimal Time to Sell in Real Estate Portfolio Management”, by Fabrice Barthélémy and Jean-Luc Prigent. This paper presents an innovative use of options theory to explore a topic that has not been previously much considered in the academic real estate investments literature, the optimal holding period of property investments. The paper shows, using both analytical and simulation models, that both the ex ante and realized value of a portfolio of properties can be sensitive to the holding period determination decision rule.

Finally, the last paper in this special issue reprises some of the issues of the first paper, regarding propensity of the private property markets to over-price, only now focusing on the debt markets in an international cross-section, and utilizing real options theory in the analysis. This is the paper entitled: “Mortgage Put Options and Real Estate Markets”, by Andrey Pavlov and Susan Wachter. The authors’ key hypothesis is that the underpricing of this put option in banks’ property loans (i.e., overly lenient terms in the mortgages) is associated with real estate bubbles. By itself, this underpriced lending does not cause these bubbles to burst, but their existence does lead to more severe negative market reactions to external shocks. Using price data for listed property stocks for 29 countries, they are able to show that loan underpricing indeed results in asset price inflation, and that countries experiencing it also experience greater price declines during a market crash. This suggests that the economic impact of potential bubbles can be mitigated by enforcing prudent lending rules. Indeed, taking both this paper and the Clayton-Ling-Naranjo paper together, it would appear to be worthwhile to explore whether, and how, policy-makers should consider means to mitigate the effects of the irrational component in investor behavior which can lead to bubbles in the private real estate markets.

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